



Implications of strategic alliances for earnings quality and capital market investors[☆]



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ABSTRACT

Strategic alliances are well-established organizational forms and a means of strategy implementation. Despite their growing pervasiveness in the economy, existent literature provides few insights about earnings quality of strategic alliances. This challenge is especially severe in contractual alliances (CAs), where firms do not form a new corporate entity that is separate from the parent organization in comparison to joint ventures (JVs). We investigate how earnings attributes differ depending on involvement in strategic alliances of 8137 CAs and 3026 JVs spanning 1997–2007. We find, in particular, that earnings attributes of firms involved in contractual alliances are broadly reflective of low underlying accounting quality. Relative to JV firms and non-alliance (NA) firms, they have higher levels of discretionary accruals, lower accrual quality, and earnings that are less persistent, less smooth, less relevant, less timely, and less conservative. They also have lower earnings response coefficients.

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1. Introduction

Strategic alliances are voluntarily initiated cooperative agreements between firms that involve exchanging, sharing or co-developing resources or firm-specific assets (Li, Qian, & Qian, 2013). Firms enter strategic alliances to minimize costs that stem from coordination difficulties, to access other parties' resources, to acquire institutional knowledge, and to retain and develop own resources by combining them with those of partners' (Chan, Kensinger, Keown, & Martin, 1997).

In this study, we tackle the broad question of how firms' earnings quality differs depending on their involvement in strategic alliances. Despite growing pervasiveness of strategic alliances the existent literature provides few insights about the impact of strategic alliances on firms' earnings. This impact is particularly important for firms' strategy since firms' earnings is a significant indicator of firm performance. In particular, alliances often involve an ongoing intermingling of the operations, such as of reporting behaviors, of two or more "independent" entities. Hence, the economic performance of one involved entity now

depends partly on the well-being of its partner(s). Moreover, while the overall alliance constitutes an arms-length agreement, the structuring of individual transactions and allocations within it may involve various informal quid-pro-quo arrangements among the partners. These tradeoffs have substantive implications for periodic financial accounting reports. In such cases, strategic alliance arrangements may blanket various opportunistic and short-run earnings management activities.

Using earnings quality metrics established in the literature (Velury & Jenkins, 2006) we explore the earnings quality of (1) firms involved in joint venture alliances (JV), and (2) firms involved in contractual alliances (CA). Specifically, we evaluate whether earnings attributes differ between firms with joint ventures (JV-firms) and firms with contractual alliances (CA-firms), as well as between such alliance firms and firms without any recent alliance activity (i.e., non-alliance or NA-firms). Our findings broadly support that firms involved in CA earnings exhibit inferior attributes relative to either JVs or NAs. However, JVs and NAs are indistinguishable for most of the earnings quality attributes examined. Although managers of CA-firms provide more quantitative and qualitative voluntary earnings reports, i.e. voluntary disclosure, than that of all other firms including JV-firms and NA-firms to decrease the premium that investors demand because of poorer information quality environment, when the alliance is not formalized and largely unreported, there is still an evidence of a substantive relative impairment in earnings quality.

2. Literature review

Strategic alliances accomplish preset objectives such as increasing efficiency and creating competitive advantages while avoiding both market uncertainties and hierarchical rigidities. Strategic alliances may be formalized as JVs in which the joint activities are compartmentalized

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into a separate stand-alone entity or they may be left comparatively undefined and intertwined, a state we identify as CAs. Partner firms share benefits and managerial control over the performance of assigned tasks, and make continuing contributions to one or more strategic areas, such as technology or product development. Partner firms in a strategic alliance remain legally independent after the alliance is formed (Yoshino & Rangan, 1995). Chan et al. (1997) observe that CA-firms do not share equity controls, but they fulfill their responsibilities and contribute to the partnership with their resources, such as high technology, products and/or skills, product design, delivery schedules, prices and other terms. Moreover, CAs do not prepare financial reports or file tax returns individually. Thus, in most cases any detail related to the individual activities of contractual alliances is not available for external users or the public.

Anand and Khanna (2000) recognize alliances as complex organizational types with incomplete contracts that are open to all kinds of informational noise, and managerial discretions. Alliance setting is a fertile environment for opportunistic managers and directors to exercise their personal interests through their accounting choices. Two control problems arise with firms involved in alliances: (1) the management of appropriation concerns that result from partner firm's opportunistic behaviors, and (2) the coordination of tasks by building on transaction cost economics and organizational theory.

Evidence on market reaction to the formation of either CA or JV is limited. Das, Sen, and Sengupta (1998) documented that, on average, abnormal returns are positive and statistically significant when there is a strategic alliance announcement. By partitioning the sample into marketing and technological alliances, they found that overall positive abnormal returns are attributable to technological alliances. Chan et al. (1997) documented positive price reaction to the formation of CA without evidence of wealth transfer. McConnell and Nantell (1985), Koh and Venkatraman (1991) and Woolridge and Snow (1990) found abnormal positive returns around the time that the JV agreements were announced.

3. Research issues

In many cases, the economic performance of strategic alliances is difficult to discern from the involved firm. While this coupling is formal in JVs, it may impair the quality of their financial reporting. This is especially so in CAs where the intertwining is informal, because joint activities are not compartmentalized. These reporting techniques may create allocation problems when each partner needs to report their financial transactions individually.

Separating financial activities of the partner firm's entities from those of the strategic alliances has been an ongoing challenge for accounting practitioners both in terms of financial and tax reporting issues (Wallman, 1995). There is also no standard reporting requirement regarding the strategic alliance activities of firms (Healy & Palepu, 2001). Hence, we examine the relationship between earnings quality and either JV or CA involvement. Our explanatory study provides insights into whether such arrangements are generally benign, with no substantive externally observable financial reporting implications; or consistent, with alliance driven reporting consequences that affect the quality of externally reported financial information.

3.1. Financial reporting aspects of strategic alliances

In most cases, the economic performance of a firm involved in strategic alliances is coupled with its alliance partners. For example, it is difficult for financial statements to fully reflect the exclusive contracts that underlie strategic alliance relations between Steve Madden and its manufacturers. Because of its alliances, Steve Madden has been able to outsource the low margin activities for its business. However, the reported financial performance of Steve Madden does not fully reflect the complex relationship and implicit commitments between the

companies. Therefore, distortions to any of the accounting numbers and allocations related to contractual alliances and joint ventures may create inherent problems and noise in the financial statements of the partnering firms. Especially in CAs where, activities of the allied firms are completely intermingled, such economic activities by each firm must be separated for individual financial reporting. This separation process, even if conducted in "good faith", could lead to substantial distortions in the financial reports of allied firms. This would make it difficult for the preparers and users of financial reports to distinguish the individual activities of allied firms accurately. For example, CAs and allied firms often share common resources such as information technology, legal services, human resource management and executive time. Common cost allocation of these resources is difficult when undertaken as an explicit exercise (Ray, 2007). In less formal CA settings common costs may entirely escape from explicit accounting attention and may simply fall out of the affiliated company's financial statements. In a similar fashion, consolidating JV financials with those of the parent firms may also create accounting problems when the JV and its parent firms use different accounting methods.

The fundamental conflict posed by strategic alliances concerns the viability of treating them as independent entities. The very nature of a strategic alliance implies mutual dependence. In CAs, the issue is compounded by the fact that, unlike JVs, the alliance is not a compartmentalized organization with its own separate accounting system. That is, CAs rely on the allied firms' accounting systems, therefore the financial information/performance of CAs is non-systematically and non-observably aggregated into the parent firm financial reports. Alternatively, JVs generate separate financial reports based on a JV-specific accounting system for their partners and interested parties. Therefore, this joint activity is observable and transparent in the case of JVs. Moreover, income impacts are allocated to partners based on the JV agreement making them observable to external parties. Hence, while interdependence characterizes both forms of strategic alliances they differ markedly in terms of the underlying accounting mechanics.

Unlike JVs, where parent firms establish a separate organizational unit with established accounting and controlling systems, in CAs there are no such regulatory requirements (Healy & Palepu, 2001). Absence of such a mandated disclosure may contribute more to the noisiness of the reporting of CAs. However, from a market-based point of view (Core and Guay, 2001), firms may need to respond to investors' information demand when accounting data is less useful in assessing firm value and informing the market. In order to do so, CA-firms provide more remedial quantitative and qualitative data in the form of voluntary disclosures than JV-firms and NA-firms such as non-financial discussions in their reporting. This finding may be due to a response to investors' information demand when accounting data is less useful in assessing firm value accurately. In other words, although not required legally, especially we observe more voluntary disclosure of qualitative information in CAs. Such a remedy targeted towards increasing the accounting based reporting quality may eventually decrease noise in accounting reporting of CA-firms. Table 1 provides some useful insights about the financial reporting attributes of JVs and CAs.

JV-firms commonly provide joint activity information in both the Management Discussion and Analysis and the financial reporting sections of their annual reports. In some cases, they also provide complete financial statements showing how each transaction affects the main business activities of the parent firms. CA-firms generally do not provide quantitative financial information about their partnership activities. However, they tend to provide information regarding the strategic influence of the alliance on the firm, and the purpose behind establishing CAs.

Panel A of Table 1 is based on our examination of firm financial reports (i.e., annual reports and 10Ks) of 100 randomly selected JV-firms and CA-firms. This table provides a breakdown of the fundamental joint activity(ies) encompassed by the strategic alliance for JV and CA samples. For JV-firms revenue sharing (43 firms), operating cost sharing

Table 1

Content analysis of joint venture and contractual alliance financial reports (Year 1997–2007).

Panel A: nature of joint activity (n = 100)				
Type	Joint ventures		Contractual alliances	
Activity type				
Revenue sharing including customer listings	43 reports		34 reports	
Operating cost sharing	31		42	
Technology/patent/trademark sharing	23		17	
Research/product development sharing	27		39	
Distribution channels/market sharing	24		32	
Strategic motivation				
Resource sharing	56		43	
Risk sharing	48		52	
Legal responsibilities sharing	23		19	
Other	8		6	
Panel B: annual report/10K content (n = 100)				
	Number of reports containing specified type of information in quantitative form		Numbers of reports containing specified type of information in qualitative form	
	Joint ventures	Contractual alliances	Joint ventures	Contractual alliances
Financial disclosures				
Income	92	19	65	19
Revenues	75	17	58	14
Costs/expenses	75	53	15	8
Investment	57	48	35	39
Transactions	46	37	4	3
None	8	65	8	52
Non-financial discussions				
Partner(s) identified	N/A	N/A	82	73
Nature of venture	N/A	N/A	86	68
Strategic aspects	N/A	N/A	79	56
None found			5	12

(31 firms), and research/product development sharing (27 firms) are the most commonly identified joint activities. For CA-firms these same activities also constitute the three most common joint activities, but operating cost (42 firms) and research/product development (39 firms) sharing are found in more firms while revenue sharing is found in fewer firms (34 firms). Resource sharing is the most common strategic motivation for JV firms (56 firms) followed by risk sharing (48 firms). These numbers are similar for CA-firms (43 and 52 firms respectively). Overall, evidence in Panel A suggests that JV-firms and CA-firms encompass similar sorts of activities and strategic motivations.

Panel B of Table 1 reports the frequencies with which JV-firms and CA-firms financial reports provide quantitative or qualitative information about joint incomes, revenues, costs, investment, and other transactions. What stands out in this panel is the fewer reporting of alliance related quantitative and qualitative information for CAs relative to JVs. Almost all (92) of the JV firm financial reports provide some form of quantitative disclosure about the alliance activity. In contrast, most (65) of the CA-firm reports provide no quantitative information about the alliance and, in fact, more than half (52) are also not providing qualitative information about its financial aspects. In terms of specific types of financial information, 92 out of the 100 JV-firms report income numbers for the venture. In comparison, only 19 out of the 100 CA-firms report such income numbers. Similar divergences arise with respect to revenues (75 vs. 17), costs (82 vs. 15), and specific transactions (46 vs. 4) for JVs vs. CAs. Overall, financial reports appear to be far more revealing of JV activities than they are of CA activities.

3.2. Monitoring and opportunism in strategic alliances

The interdependent nature of strategic alliances influences managerial control over real decision-making and the performance of the involved firms. However, it is unclear whether these impacts tend

to reduce or augment opportunistic behaviors of strategic alliance managers.

Inter-firm relationships between the participants of alliances will increase the complexity in management control because parent firms are autonomous and they may have different expectations from the alliances (Kamminga & Van der Meer-Kooistra, 2007). Such differences in expectations when coupled with blurring boundaries of the firm, as in the case of CAs, creates more incomplete or distorted disclosure of information, i.e. managerial opportunism (Williamson, 1985). Opportunistic activity by the managers in CA-firms in turn affects financial reporting quality and lead to information asymmetry between the top management and investors. Managerial opportunism also impacts accounting method choices of alliance firms' managers (Watts & Zimmerman, 1986).

JV and CA portfolios signal the market the type of managers in charge of the firm. Managers seek efficiency by searching cost reducing investment activities to share risks with other firms. This way they gain competitive advantage and reach several resources that they are not able to do otherwise. However, strategic alliance investments may cause managerial opportunism through business uncertainties, several types of risks, legal costs, loss of a competitive advantage and loss of reputation, and the lack of trust of partners for each other. Parent firms of strategic alliances may monitor and take an active role in the decision making process of their partners (Smith, 1996). Such cross monitoring may decrease the abilities of the allied firm managers to behave opportunistically hence influence disclosure choices.

Contractual and monitoring costs are minimized by equity sharing (Williamson, 1985). JV-firms share equity ownership in the form of a separate business entity; therefore, they have lower contractual and monitoring costs in comparison to CA-firms. In other words formalized equity ownership aligns incentives better in JVs relative to CAs. In CAs, the absence of a separate economic entity due to blurring boundaries

Table 2
Two-digit industry classifications (SICs).

SIC code and industry description	JV-firms	CA-firms	NA-firms	JV&CA
01 – Agricultural production-crops	15	17	167	5
02 – Agricultural production-livestock	10	4	24	1
07 – Agricultural services	12	6	27	0
08 – Forestry	0	0	27	0
09 – Fishing and hunting	0	8	22	0
10 – Metal mining	82	34	815	23
12 – Coal mining	0	7	46	0
13 – Oil and gas extraction	128	172	2295	37
14 – Manufacturing, non-materials	22	19	219	5
15 – General building contractors	45	13	513	3
16 – Heavy construction,	25	32	248	5
17 – Special trade contractors	10	13	221	0
20 – Food and kindred products	68	142	1550	38
21 – Tobacco products	12	8	78	0
22 – Textile mill products	27	27	356	8
23 – Apparel and other textile products	23	103	594	8
24 – Lumber and wood products	32	19	324	5
25 – Furniture and fixtures	30	37	381	10
26 – Paper and allied products	85	52	683	23
27 – Printing and publishing	28	131	783	28
28 – Chemical and allied products	202	723	4190	168
29 – Petroleum and coal products	40	101	324	53
30 – Rubber and miscellaneous plastic	43	62	656	13
31 – Primary metal industries	8	47	205	8
32 – Fabricated metal products	27	25	437	5
33 – Industrial machinery/equipment	90	87	1018	28
34 – Electronic and other equipment	40	43	948	0
35 – Transportation equipment	133	636	3702	158
36 – Instruments and related products	122	680	4650	180
37 – Miscellaneous manufacturing	100	183	1276	98
38 – Railroad transportation	85	493	3989	53
39 – Misc. manufacturing Industries	17	95	705	13
40 – Railroad transportation	18	25	162	0
41 – Local and interurban passenger	0	5	46	3
42 – Trucking and warehousing	6	23	510	8
44 – Water transportation	18	8	248	3
45 – Transportation by air	8	65	381	45
46 – Pipelines, except natural gas	8	0	24	1
47 – Transportation services	10	20	238	3
48 – Communications	110	373	1923	258
49 – Electric, gas, and sanitary services	191	143	2432	53
50 – Wholesale trade – durable goods	55	133	1725	23
51 – Wholesale trade – nondurable	33	100	896	15
52 – Building materials and gardening	10	25	132	0
53 – General merchandise stores	17	38	367	8
54 – Food stores	15	35	402	20
55 – Auto dealers and service stations	8	13	292	0
56 – Apparel and accessory stores	17	13	621	0
57 – Furniture and home furnishings	15	28	356	0
58 – Eating and drinking places	30	58	1129	20
59 – Miscellaneous retail	45	120	1272	15
60 – Depositing Institutions	66	168	6334	53
61 – No depositing credit institutions	22	73	797	25
62 – Security & commodity brokers	45	53	851	28
63 – Insurance carriers	62	75	1897	30
64 – Insurance agents, brokers services	17	33	343	5
65 – Real estate	30	48	788	20
67 – Holding, other investment offices	146	145	2865	45
70 – Hotels and other lodging places	45	23	302	8
72 – Personal services	0	5	203	0
73 – Business services	177	1863	1087	358
75 – Auto repair, services, and parking	12	15	143	3
76 – Misc. repair services	10	5	41	1
78 – Motion pictures	33	88	464	20
79 – Amusement and recreation	58	68	679	15
80 – Health services	50	55	1032	13
81 – Legal services	0	0	19	1
82 – Educational services	0	5	243	0
83 – Social services	10	0	176	0
86 – Membership organizations	0	0	3	0
87 – Engineering and management	45	108	1187	24
99 – No classification establishment	23	63	810	23
Total number of observations	3026	8137	69,893	2123

of the firm and formalized equity sharing influences disclosure quality and gives rise to managerial opportunism. Moreover, as Table 1 suggests, CA joint activity external disclosure levels are substantially lower than JV joint activity disclosure levels. Opportunistic managers are better able to exploit this lack of disclosure by the aggregated financial reports of parent firms.

4. Research design

4.1. Sample definition

Our analyses examine earnings quality for a sample of firms from the years 1995 through 2007. We collected announcements of strategic alliances from the Securities Data Company (SDC) Platinum database. SDC gives several characteristics of alliances such as firms' identifiers (CUSIP), their shares in the partnership, and partners' nationality. We separated each firm from the alliance announcements, since firms are collected under the same column for each alliance announcement. We use the last three years from year $t - 2$ and $t - 1$ as well as through year t to determine a firm's alliance status at year t . If a firm is not involved in the formation of a JV or CA over this three-year time we then classify that firm as a non-alliance (NA-firm). Alternatively, if a firm is involved in the formation of one or more JV and CA at the same time then we classify that firm as a JV&CA-firm. Firms involved solely in the formation of joint ventures are classified as JV-firms while firms involved solely in the formation of contractual alliances are classified as CA-firms.

Table 2 documents the two-digit industry classification of strategic alliance firms. The highest number of firm-year observations for CA-firms is 1863 for business service industry and for JV-firms it is 202 for chemical and allied industry.

Overall, there are 3026 JV-firms, 8137 CA-firms, 2123 JV&CA, and 69,893 NA-firm year observations in the sample. Sample sizes vary according to availability of earnings quality metrics for a specific analysis.

4.2. Earnings quality measures

There are a number of accounting related proxies used in the literature to measure the earnings potential of firms. Following Francis, LaFond, and Schipper (2004), we divide our analyses based on whether a given proxy is purely accounting-based or whether it also incorporates equity market valuation properties market-based. The first one consists of accounting-based earnings attributes that reflect on the fundamental informative properties of accounting earnings figures without reference to any specific user group. The latter includes attributes that reflect the equity investors' sensitivity to the level of uncertainty and informativeness in earnings.

4.2.1. Accounting-based earnings quality measures

We use five accounting based attributes: (1) earnings persistence, (2) earnings smoothness, (3) accrual quality, (4) discretionary accrual, and (5) absolute discretionary accrual.

4.2.1.1. Earnings persistence. The persistence measure captures earnings sustainability and it is a desirable measure of quality because of its recurring characteristics (Francis et al., 2004; Velury & Jenkins, 2006). Moreover, earnings persistence is positively associated with the capital market responses to reported earnings due to the higher quality of earnings (Kormendi & Lipe, 1987). Following Ali and Zarowin (1992) we calculate earnings persistence as the slope coefficient estimate from a first order autoregressive model for annual split adjusted earnings per share by using the maximum likelihood estimation and a rolling six-year window. This method yields a firm and year specific coefficient λ_1 which represents the PERSISTENCE of earnings for each firm at year t .

PERSISTENCE values close to one indicate highly persistent earnings, and close to zero represent transient earnings.

$$EPS_{j,t} = \lambda_{0,j} + \lambda_{1,j}EPS_{j,t-1} + error_{j,t} \quad (1)$$

where EPS is earning per share that is equal to income before extraordinary items, divided by the weighted average number of shares outstanding.

We examine how *PERSISTENCE* varies across JV firms, CA firms and NA firms, by estimating the following model:

$$PERSISTENCE = \alpha + \beta_1 CA + \beta_2 JV + \beta_3 SIZE + \beta_4 MB + \beta_5 ROA + \sum r_i INDUSTRY_i + \sum r_i YEAR + error. \quad (2)$$

CA is an indicator variable that takes the value of one if the firm established a CA partnership, such as a marketing alliance, R&D alliance, or licensing alliance in any of the last three years, the value is zero otherwise. JV is an indicator variable that takes the value of one if the firm established a JV alliance in any of the last three years, and the value of zero otherwise. SIZE is the natural logarithm of the market value of equity at the beginning of the fiscal year. MB is the market-to-book ratio that is calculated by using the market value of equity divided by the book value of equity. ROA is the current year's return on assets calculated as net income before extraordinary items divided by total assets. INDUSTRY is a dummy variable for each two-digit industry membership of each sample firm. YEAR is a dummy variable that takes the value of one for that year, and zero otherwise for other years. We adopt control variables from Lev (1983) which documents that earnings persistence is associated with firm size and various industry characteristics: type of products, degree of competition, and operating leverage.

4.2.1.2. Smoothness. Smoothing is defined as reducing the variability of reported earnings by altering the accounting component of earnings, namely accruals (Leuz et al., 2003). Managers may opportunistically smooth earnings to maximize benefits from bonus plans (Healy, 1985) or to signal lower risk (Trueman & Titman, 1988). When earnings are smoothed to mitigate the effects of transitory cash flows and adjust reported earnings towards a more stable trend, then income smoothing can enhance the value relevance of earnings (Subramanyam, 1996). That is, smooth earnings constitute a desirable attribute by the capital market. Instead, managers may smooth earnings to align expectations with that of the market and even to increase their persistence (Hand, 1989).

We measure smoothness following Francis et al. (2004). Smoothness is the ratio of standard deviation of net income before extraordinary items divided by beginning total assets (NIBE), to its standard deviation of cash flows from operations over the rolling six-year window method (CFO), scaled by beginning total assets as follows:

$$SMOOTHNESS_{j,t} = \sigma(NIBE_{j,t}) / \sigma(CFO_{j,t}). \quad (3)$$

Larger values of *Smoothness* indicate less smooth earnings. We estimate the following regression model to determine the difference between CA-firms and NA-firms, and between JV-firms and NA-firms:

$$SMOOTHNESS = \alpha + \beta_1 CA + \beta_2 JV + \beta_3 SIZE + \beta_4 MB + \beta_5 ROA + \sum r_i INDUSTRY_i + \sum r_i YEAR + error. \quad (4)$$

4.2.1.3. Accrual quality. Earnings that map closely into cash are more desirable (Harris et al., 2000). Accrual quality is frequently used as a proxy measure of the quality of earnings (Dechow & Dichev, 2002). We use the Dechow and Dichev (2002) model as follows:

$$TCA_{j,t} = \alpha_{0,j} + \alpha_{1,j}CFO_{j,t-1} + \alpha_{2,j}CFO_{j,t} + \alpha_{3,j}CFO_{j,t+1} + error_t \quad (5)$$

where $TCA_{j,t} = \Delta CA_{j,t} - \Delta CL_{j,t} - \Delta Cash_{j,t} + \Delta STDEBT_{j,t}$ which is firm *j*'s total current accrual in year *t* scaled by firm *j*'s average total assets in year *t* and *t* – 1. $CFO_{j,t} = NIBE_{j,t} - TA_{j,t}$ where the variables of interest are defined previously. $TA_{j,t} = (\Delta CA_{j,t} - \Delta CL_{j,t} - \Delta Cash_{j,t} + \Delta STDEBT_{j,t} - DEPN_{j,t})$ which is total accruals in year *t* divided by firm *j*'s average total assets in year *t* and *t* – 1. $\Delta CA_{j,t}$ is change in current assets of firm *j*'s between year *t* – 1 and year *t*. $\Delta CL_{j,t}$ is change in current liabilities, $\Delta Cash_{j,t}$ in cash, $\Delta STDEBT_{j,t}$ debt in current liabilities of firm *j*'s between year *t* – 1 and year *t*. $DEPN_{j,t}$ is depreciation and amortization expense of firm *j*'s in year *t*. We estimate Eq. (5) for each year using rolling six-year windows. Accrual Quality (ACCQ) is equal to the standard deviation of firm *j*'s estimated residuals from year *t* – 5 to year *t*, $\sigma(error_{j,t})$. Large values of ACCQ represent poor accrual quality as well as poor earnings quality.

Following Ashbaugh, LaFond, and Mayhew (2003) we conduct an empirical test by including JV and CA explanatory indicator variables and replace discretionary accruals with ACCQ as the dependent variable.

$$ACCQ = \alpha + \beta_1 CA + \beta_2 JV + \beta_3 SIZE + \beta_4 MA + \beta_5 FINANCING + \beta_6 LITIGATION \quad (6)$$

where MA is a dummy variable that takes the value of one if the firm has engaged in a merger and/or acquisition activity, and zero otherwise. FINANCING is an indicator variable set equal to one if MA dummy is not equal to one and the number of outstanding shares has increased by at least 10%, or if long-term debts increased by at least 20%, or if the firm first appears on the CRSP monthly returns database during the fiscal year, zero otherwise. LITIGATION is a dummy variable that equals one if the firm operates in the high litigation industries with the SIC codes of 2833–2836, 3570–3577, 3600–3674, 5200–5961, 7370–730, and zero otherwise. LEVERAGE is the ratio of total debt to total assets at the beginning of the fiscal period: total assets minus its book value divided by its total assets. MB is the market-to-book ratio calculated as market value of equity divided by book value of equity. LOSS is an indicator variable that takes the value of one if the firm reports a net loss for the fiscal period, and zero otherwise. INSTSHARE is the percentage of shares held by institutional investors reported in the Thomson financial database 13-f filings section. All other variables are defined previously.

4.2.1.4. Discretionary accruals. A higher value of discretionary accrual may signal a greater level of earnings management and lower earnings quality (Dechow & Schrand, 2004), therefore accruals may be used opportunistically. We estimate the modified Jones model separately for each year for each two-digit SIC code and compute performance adjusted discretionary current accrual (PADCA) as the difference between the abnormal accrual and the closest matched firm's abnormal accrual. Closest matched firm is the firm in the same two-digit SIC code with the closest ROA in the prior year (Kothari, Leone, & Wasley, 2005).

We estimate Eq. (7) to examine the relationship between signed PADCA and the firms' alliance strategies. We also use the ABSPADCA (absolute value of PADCA) to capture both negative and positive accruals as earnings management and earnings quality.

$$PADCA = \alpha + \beta_1 CA + \beta_2 JV + \beta_3 L1ACCRUAL + \beta_4 SIZE + \beta_5 MA + \beta_6 FINANCING + \beta_7 LITIGATION + \beta_8 LEVERAGE + \beta_9 MB + \beta_{10} LOSS + \beta_{11} CFO + \beta_{12} INSTSHARE + \beta_{13} ROA + \sum r_i INDUSTRY_i + \sum r_i YEAR + error \quad (7)$$

$$ABSPADCA = \alpha + \beta_1 CA + \beta_2 JV + \beta_3 ABSL1ACCRUAL + \beta_4 SIZE + \beta_5 MA + \beta_6 FINANCING + \beta_7 LITIGATION + \beta_8 LEVERAGE + \beta_9 MB + \beta_{10} LOSS + \beta_{11} CFO + \beta_{12} INSTSHARE + \beta_{13} ROA + \sum r_i INDUSTRY_i + \sum r_i YEAR + error \quad (8)$$

where L1ACCRUAL is equivalent to last year's total current accruals. ABSL1ACCRUAL is the absolute value of L1ACCRUAL. These variables are

included as control variables to capture the reversal of accruals over time. Other variables are as previously defined.

4.2.2. Marked-based earnings attributes

We have four measures that incorporate market-based impacts of accounting information.

4.2.2.1. Value relevance. Value relevance is measured as the ability of earnings to explain a variation in returns where the greater explanatory power is desirable (Bushman, Chen, Engel, & Smith, 2004). A number of studies interpret the value relevance of earnings as the direct measure of usefulness of the financial reporting decisions (Francis et al., 2004). We use the following regression specification for each firm over rolling six-year windows. *RELEVANCE* is measured as the adjusted R-square of the regression.

$$RET_{j,t} = a_{0,j} + a_{1,j}EARN_{j,t} + a_{2,j}\Delta EARN_{j,t} + error_{j,t} \quad (9)$$

$RET_{j,t}$ firm *j*'s 15-month compounded return ending three months after the end of the fiscal year *t*; $EARN_{j,t}$ is firm *j*'s income before extraordinary items in year *t* (NIBE) scaled by market value at the end of year *t* – 1; $\Delta EARN_{j,t}$ is change in firm *j*'s NIBE in year *t* scaled by market value at the end of year *t*. Large (small) values of relevance measure imply more (less) value relevance of earnings. We run the following regression analysis to find the effects of the types of strategic alliances on the *RELEVANCE* of earnings compared to NA firms:

$$RELEVANCE = \alpha + \beta_1 CA + \beta_2 JV + \beta_3 SIZE + \beta_4 MB + \beta_5 ROA + \sum r_i INDUSTRY_i + \sum r_t YEAR_t + error. \quad (10)$$

4.2.2.2. Timeliness. Earnings timeliness measures the extent to which current earnings captures the information set underlying the current changes in stock price (Ball, Kothari, & Robin, 2000). Managers may require timely information to determine how well their actions are reflected in stock prices. Alternatively, managers may delay the disclosure of private information because of their private rent seeking incentives.

Bushman et al. (2004) document that ownership concentration, the directors' and executives' equity based incentives, and outside directors' reputations vary inversely with earnings timeliness, and that ownership concentration, and directors' equity based incentives increase with organizational complexity. Accordingly, we may expect less timeliness in earnings for CA firms and JV firms. We calculate timeliness of earnings by using a reverse regression setting for earnings as a dependent variable and return as an independent variable.

$$EARN_{j,t} = a_{0,j} + a_{1,j}NEGDU_{j,t} + a_{2,j}RET_{j,t} + a_{3,j}NEGDU \times RET_{j,t} + error_{j,t} \quad (11)$$

where $NEGDU_{j,t} = 1$ if $RET_{j,t} < 0$, zero otherwise. We estimate Eq. (11) by using the rolling six-year window method. Our measure of timeliness is adjusted R^2 in the above regression (Bushman et al., 2004). The higher the value of timeliness measures, the higher the timeliness of earnings. We employ the following regression analysis to document the relationship between timeliness, JV, CA, and NA firms.

$$TIMELINESS = \alpha + \beta_1 CA + \beta_2 JV + \beta_3 SIZE + \beta_4 MB + \beta_5 ROA + \sum r_i INDUSTRY_i + \sum r_t YEAR_t + error \quad (12)$$

4.2.2.3. Conservatism. Conservatism is defined as asymmetrical recognition of gains and losses. Conservatism is a desirable attribute of earnings since it can be used to decrease information asymmetry by reducing manager's ability to manipulate financial statements (Watts, 2003). Conservatism is the ratio of the coefficient on bad news to the coefficient on good news which measures the difference in sensitivity of

negative earnings in comparison to positive earnings (Francis et al., 2004).

$$CONSERVATISM = (a_{2,j} + a_{3,j})/a_{1,j} \quad (13)$$

The higher the value of this measure the more conservative is the firm's earnings. We employ the following regression model to determine the earnings conservatism in alliance firms compared to NA-firms.

$$CONSERVATISM = \alpha + \beta_1 CA + \beta_2 JV + \beta_3 SIZE + \beta_4 MB + \beta_5 ROA + \sum r_i INDUSTRY_i + \sum r_t YEAR_t + error \quad (14)$$

4.2.2.4. Earnings response coefficient (ERC). ERC confines the ability of earnings to predict future cash flows more expansively. We expect that ERC result would support our findings in the direction of the market based earnings attributes. We build upon the Ali, Chen, and Radhakrishnan (2007) model as follows:

$$CAR = a_0 + a_1 \Delta EPS + a_2 CA + a_3 \Delta EPS \times CA + a_4 JV + a_5 SIZE + a_6 MB + a_7 BETA + a_8 \Delta EPS \times JV + a_9 \Delta EPS \times SIZE + a_{10} \Delta EPS \times MB + a_{11} \Delta EPS \times BETA + \sum r_i INDUSTRY_i + \sum r_t INDUSTRY_t \times \Delta EPS + \sum r_t YEAR_t + error \quad (15)$$

where *CAR* is the 12-month annually compounded size-adjusted abnormal return beginning four months after the fiscal year end of year *t* – 1 and ending 3 months after the fiscal year end of year *t*; ΔEPS is the split-adjusted annual change in earnings per share deflated by the price at the beginning of the return accumulation period; *BETA* is the systematic risk estimate obtained by regressing 60 monthly returns ending year *t* – 2 on the CRSP equally weighted return index.

4.3. Voluntary disclosure

Companies may use voluntary management earnings guidance as a complement to the financial statements when an accounting system is less informative. Voluntary earning disclosure could be beneficial for investors to value the firm properly and may increase the market participants' confidence and knowledge about the firm. Therefore, voluntary earning disclosure may be a substitute and as a remedy to decrease the accounting information noise.

To examine the likelihood of management issuing quarterly earnings forecasts across CA-firms and all other firms, we use quarterly earnings guidance obtained from Thompson First Call Historical Database (FCHD), Company Issued Guidance (CIG) file. Our model is the extended form of Kasznik and Lev (1995)

$$Guidance/Forecast = \alpha + \beta_1 CONTRACTUAL + \beta_2 \Delta EPS + \beta_3 JOINTVENTURE + \beta_4 SIZE + \beta_5 BM + \beta_6 HIGHTECH + \beta_7 REGULATED + \beta_8 ROA + \beta_9 BETA + \sum r_i INDUSTRY_i + \sum r_t YEAR_t + error \quad (16)$$

where *TOTAL* is a dummy that takes the value of one if the manager makes an earnings forecast of quarterly earnings, zero otherwise. Essentially *TOTAL* variable takes the value one if the total guidance given in a year is bigger than one, zero otherwise. *QUALITATIVE* is the number of qualitative forecasts in a year for a manager of a firm. *QUANTITATIVE* is the number of quantitative forecasts in a year by the manager of a firm. *HIGHTECH* is an indicator variable that takes on a value of one if the firm operates in any of the following industries: Drugs (SIC codes 2833–286), Computers (3570–3577), Electronics (3600–3674), Programming (7371–7379), R&D services (8731–8734), zero otherwise. *REGULATED* is an indicator variable that takes on a value of one if the firm operates in any of the following industries: Telephone (SIC Codes 4812–4813), TV (4833), Cable (4841), Communications (4811–4899), Gas (4922–4924), Electricity (4931), Water (4941), Financial Firms (6021–6023, 6035–6036, 6141, 6311, 6321, 6331), zero otherwise. All other variables are as defined previously.

Table 3
Descriptive statistics (year 1997–2007).

Panel A: control variables							
Variables	Mean values				Mean difference test		
	JV only	CA only	NA only	JV&CA	CA-NA	JV-NA	JV-CA
SIZE	5.023	4.869	4.759	4.956	0.110***	0.264***	0.154**
MB	3.763	5.137	4.534	4.675	0.603	−0.771	−1.374
ROA	−0.028	−0.156	−0.199	−0.101	0.043***	0.171***	0.128**
No. of observations	3026	8137	69,893	2123			
L1ACCRUAL (%)	2.267	2.372	2.027	2.278	0.345*	0.240	−0.105*
ABSL1ACCRUAL(%)	5.673	6.764	6.875	6.176	−0.111**	−1.202**	−1.091**
MA	0.475	0.378	0.329	0.452	0.049***	0.146***	0.097**
FINANCING	0.179	0.201	0.192	0.198	0.009*	−0.013***	−0.022*
LITIGATION	0.138	0.298	0.241	0.264	0.057**	−0.103***	−0.160**
LEVERAGE	0.429	0.365	0.538	0.408	−0.173***	−0.109***	0.064***
LOSS	0.278	0.301	0.219	0.280	0.082**	0.059***	−0.023***
CFO	0.042	0.002	0.063	0.031	−0.061**	−0.021**	0.040***
INSTSHARE	0.345	0.284	0.321	0.315	−0.037***	0.024***	0.061***
No. of observations	2876	7963	62,744	1974			
Panel B: accounting and market based earning attributes dependent variables (JV-only)							
Variables	JV-firms mean	CA-firms Mean	NA-firms mean	JV&CA mean	CA-NA mean	JV-NA mean	JV-CA mean
<i>Accounting based measures</i>							
PERSISTENCE	0.278	0.127	0.275	0.198	−0.148***	0.003	0.151**
SMOOTHNESS	0.798	0.976	0.751	0.834	0.225**	0.047**	−0.178***
ACCQ	0.101	0.153	0.098	0.112	0.055**	0.003	−0.052***
PADCA (%)	−0.423	−0.561	0.203	−0.473	−0.764***	−0.626	0.138***
ABSPADCA	6.543	8.765	8.021	7.327	0.744***	−1.478***	−2.222**
Hotelling T ² for accounting based measures					236***	11.35	172***
<i>Market based measures</i>							
RELEVANCE	0.307	0.221	0.398	0.276	−0.177**	−0.091***	0.086***
TIMELINESS	0.376	0.278	0.412	0.305	−0.134***	−0.036	0.098**
CONSERVATISM	0.542	0.437	0.592	0.501	−0.155***	−0.050*	0.105***
No. of observations	2876	7963	62,744	1974			
Hotelling T ² for market based measures					198***	14.91	163***
Hotelling T ² for all measures					372***	37.72**	201***

Hotelling T² are calculated by following Hotelling (1947).

*** p < 0.01.

** p < 0.05.

* p < 0.10.

5. Results

5.1. Descriptive statistics

Table 3 reports descriptive statistics. As a matter of descriptive interest means in this table are provided based on whether a firm-year is classified as JV-only, CA-only, NA, or JV&CA. In the analyses that follow JV&CA, firm years are not broken out as a separate category. Moreover, exclusion of this subset of firm years from the analysis does not change the reported results in any substantive fashion.

Initial sample comprises of 3026 JV-firm, 8137 CA-firm, 69,893 NA-firm, and 2123 JV&CA-firm-year observations for which SIZE, MB and ROA data are available. In general, JV-firms are larger (SIZE) and more profitable (ROA) than CA-firm and NA-firms. CA-firms are larger in size than NA-firms are as well. Furthermore, CA-firms have lower ROA than both JV-firms and NA-firms. Panel A also presents means for the other control variables used in the various earnings quality analyses for a somewhat smaller sample of firm-year observations where the sample reduction is dictated by data availability. In general, with the exception of L1ACCRUAL, these means (medians) differ significantly at conventional levels across the three groups (JV-firm, CA-firm, and NA-firm). Therefore, it is important to control for them (as appropriate) in identifying differences in earnings quality across these three groups accurately.

Panel B of Table 3 provides information on the mean values for firm-specific earnings attribute variables. We do not report values for ERC

because we evaluate ERC variation by means of cross-sectional regressions. According to the Hotelling T² statistics the CA-firm mean vector differs significantly from either JV-firm or NA-firm mean vector. However, the JV-firm mean vector is indistinguishable from the NA-firm mean vector for these measures. The accounting-based, market-based and the combined set of mean vector measures differ from one another, although the achieved significance levels are substantially higher for comparisons involving the CA-firm mean vector. Taken individually, mean comparisons in this table reveal that CA-firms have less PERSISTENT and less SMOOTH earnings than NA-firms. In terms of the three market-based measures, CA-firms have less RELEVANT, less TIMELY, and less CONSERVATIVE earnings than NA-firms. With the possible exception of the income-increasing accruals, all of these effects are consistent with the notion that CA-firms have lower quality earnings than NA firms. In contrast, JV-firms are indistinguishable from NA-firms in terms of PERSISTENCE and SMOOTHNESS of earnings, and ACCQ, and have lower ABSPADCA than NA-firms. However, similar to CA-firms they also have less RELEVANT earnings than NA-firms.

5.2. Accounting-based earnings quality analysis

Table 4 reports independent variable coefficient estimates and associated t-statistics for the five accounting based earnings quality measures.

These results suggest that CA involvement is associated with deterioration in the financial reporting environment. Specifically, earnings of

Table 4

Alliance firms and accounting based metric regressions (Year = 1997–2007 N = 73,583).

Model 1a (b): *PERSISTENCE (SMOOTHNESS)* = $\alpha + \beta_1 CA + \beta_2 JV + \beta_3 SIZE + \beta_4 MB + \beta_5 ROA + \sum r_i INDUSTRY_i + \sum r_i YEAR + error$
 Model 2: *ACCQ (PADCA, ABSPADCA)* = $\alpha + \beta_1 CA + \beta_2 JV + \beta_3 SIZE + \beta_4 MB + \beta_5 ROA + \beta_6 MA + \beta_7 FINANCING + \beta_8 LITIGATION + \beta_9 LEVERAGE + \beta_{10} LOSS + \beta_{11} INSTSHARE + \sum r_i INDUSTRY_i + \sum r_i YEAR + error$
 Model 3a(b): *PADCA (ABSPADCA)* = $\alpha + \beta_1 CA + \beta_2 JV + \beta_3 SIZE + \beta_4 MB + \beta_5 ROA + \beta_6 MA + \beta_7 FINANCING + \beta_8 LITIGATION + \beta_9 LEVERAGE + \beta_{10} LOSS + \beta_{11} INSTSHARE + \beta_{11} CFO + \beta_{11} LIACCRUAL(ABSLIACCRUAL) + \sum r_i INDUSTRY_i + \sum r_i YEAR + error$

Independent variables	Model 1a		Model 1b		Model 2		Model 3a		Model 3b	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
CA	−0.346	−3.28**	0.371	4.71***	0.114	3.87***	−0.012	−2.13**	0.018	4.21***
JV	−0.001	−1.04	0.018	1.17	0.045	1.79*	−0.002	−0.75	0.002	1.02
SIZE	0.032	2.21**	−0.089	−3.27***	−0.034	−2.19**	0.021	2.49**	−0.028	−4.56***
MB	−0.002	−4.38***	−0.001	−2.07**	0.141	2.76***	−0.000	−0.69	−0.000	−0.56
ROA	0.075	1.87*	−0.028	−1.65*	−0.254	−2.08**	0.101	2.01**	0.024	1.27
MA					0.153	1.61	0.012	3.78***	0.104	3.18***
FINANCING					0.023	1.89*	0.367	1.65*	0.301	1.47
LITIGATION					0.002	2.46**	−0.113	−0.93	0.019	2.27**
LEVERAGE					−0.108	−1.92*	−0.176	−1.42	0.017	3.07***
LOSS					0.179	1.05	−0.021	−1.76*	−0.005	−1.07
INSTSHARE					−0.139	−2.52**	−0.017	−1.87*	0.023	0.79
CFO							−0.045	−2.27**	−0.043	−2.79***
LIACCRUAL							0.187	0.65		
ABSLIACCRUAL									0.203	2.66***
Adjusted R ² (%)	2.79		3.87		25.41		5.01		10.98	
No. of observations	73,583		73,583		73,583		73,583		73,583	
No. of clusters	13,042		13,042		13,042		13,042		13,042	
H ₀ : CA = JV (t-stat)	2.86***		4.31***		4.06***		2.72***		5.61***	

The t-statistics are corrected using the Huber–White procedure by following Petersen (2009).

*** p < 0.01.

** p < 0.05.

* p < 0.10.

CA-firms are less *PERSISTENT* than NA-firms as the *PERSISTENCE* equation CA coefficient is negative and significant (.01 level). This finding indicates that earnings of CA-firms are not sustainable, not recurring and are noisy which are not desirable for investors. *SMOOTHNESS* regression documents that CA coefficient is positive (significant at the .01) showing that CA-firms have less smooth earnings which is open to transitory fluctuations than those of NA firms. Therefore, CA firms' earnings are noisy and less representative of their operations. Accrual quality is also lower for CA-firms as the CA coefficient in the *ACCQ* equation is positive and highly significant (.01 level) that indicates that earnings of CA-firms do not map closely into cash. Lower *ACCQ* would be indication of higher cost of debt and equity for CA-firms (Francis et al., 2005).

While *PADCA* for CA-firms are marginally smaller (significant at the .05 level) than those of NA firms, the *ABSPADCA* analysis reveals that absolute variation in *PADCA* is greater for CA-firms (significant at the .01 level). Hence, CA is associated with a greater usage of accruals to manipulate income on a period-by-period basis. CA-firms use income-decreasing *PADCA* to avoid political cost, but that possibility is low for those firms because they have lower profitability ratio than both JV-firms and NA-firms.

JV firms are generally indistinguishable from NA firms in terms of the set of accounting based earnings quality metrics. JV-firms differ from NA-firms only with respect to *ACCQ* at the .10 level. This would suggest that involvement in a JV is associated with lower

Table 5

Alliance firms and marked based metric regressions (Year 1997–2007 N = 73,583).

Model 1: *RELEVANCE* = $\alpha + \beta_1 CA + \beta_2 JV + \beta_3 SIZE + \beta_4 MB + \beta_5 ROA + \sum r_i INDUSTRY_i + \sum r_i YEAR + error$
 Model 2: *TIMELINESS* = $\alpha + \beta_1 CA + \beta_2 JV + \beta_3 SIZE + \beta_4 MB + \beta_5 ROA + \sum r_i INDUSTRY_i + \sum r_i YEAR + error$
 Model 3: *CONSERVATISM* = $\alpha + \beta_1 CA + \beta_2 JV + \beta_3 SIZE + \beta_4 MB + \beta_5 ROA + \sum r_i INDUSTRY_i + \sum r_i YEAR + error$

Independent variables	Model 1		Model 2		Model 3	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
CA	−0.132	−2.87***	−0.203	−5.08***	−0.375	−3.89***
JV	−0.076	−1.54	0.176	1.88*	0.078	1.18
SIZE	0.108	3.25***	0.159	2.47**	−0.176	−2.87***
MB	0.017	1.08	0.054	0.98	0.048	2.09**
ROA	0.543	2.08**	0.265	1.79*	0.632	1.45
Adjusted R ² (%)	4.27		5.08		3.27	
No. of observations	73,583		73,583		73,583	
No. of clusters	13,042		13,042		13,042	
H ₀ : CA = JV (t-stat)	4.27***		5.34***		3.81***	

The t-statistics are corrected using the Huber–White procedure by following Petersen (2009).

*** p < 0.01.

** p < 0.05.

* p < 0.10.

Table 6

Alliance firms and earning response coefficient (ERC) (Year 1997–2007 N = 26,877).

Model: $CAR = a_0 + a_1\Delta EPS + a_2CA + a_3\Delta EPS \times CA + a_4JV + a_5SIZE + a_6MB + a_7BETA + a_8\Delta EPS \times JV + a_9\Delta EPS \times SIZE + a_{10}\Delta EPS \times MB + a_{11}\Delta EPS \times BETA + \sum r_i INDUSTRY_i + \sum r_i INDUSTRY_i \times \Delta EPS + \sum r_i YEAR_t + error$							
Panel A: descriptive statistics							
Variables	Mean				Mean difference tests		
	JV only	CA only	NA only	JV&CA	CA-NA	JV-NA	JV-CA
CAR	0.023	0.009	0.028	0.021	−0.019**	−0.005*	0.014
ΔEPS	0.019	0.013	0.023	0.016	−0.010**	−0.004	0.006
SIZE	5.243	4.974	4.875	5.072	0.095***	0.368***	0.269
MB	3.247	4.321	4.265	4.643	0.056***	−1.018***	−1.074***
BETA	0.902	1.108	0.878	1.054	0.230***	0.024	−0.206***
No. of Obs.	1256	2578	22,056	987			
Panel B: regression estimates							
Independent variables	Model						
	Predicted sign	Coeff.	t-stat				
ΔEPS	+	0.329	4.03***				
CA	?	−0.023	−2.21**				
$\Delta EPS \times CA$?	−0.087	−2.78***				
JV	?	−0.018	−1.54				
SIZE	+	−0.157	−4.71***				
MB	−	−0.042	−2.01**				
BETA	+	0.047	3.05***				
$\Delta EPS \times JV$?	−0.006	−2.27**				
$\Delta EPS \times SIZE$	+	0.060	1.87*				
$\Delta EPS \times MB$	+	0.035	3.42***				
$\Delta EPS \times BETA$	−	0.024	1.18				
Adjusted R^2 (%)		6.78					
No. of observations		26,877					
No. of clusters		3979					
H_0 : CA = JV (t-stat)		3.04***					
H_0 : $\Delta EPS \times CA = \Delta EPS \times JV$ (t-stat)		4.16***					

The t-statistics are corrected using the Huber–White procedure.

*** p < 0.01.

** p < 0.05.

* p < 0.10.

Table 7

Descriptive statistics of alliance firms and voluntary management guidance (Year 1997–2007 N = 73,583).

Model: $Guidance = \alpha + \beta_1 CONTRACTUAL + \beta_2 \Delta EPS + \beta_3 JOINTVENTURE + \beta_4 SIZE + \beta_5 BM + \beta_6 HIGHTECH + \beta_7 REGULATED + \beta_8 ROA + \beta_9 BETA + \sum r_i INDUSTRY_i + \sum r_t YEAR_t + error$									
Panel A: descriptive statistics									
Variables	Mean difference test			Median difference test					
	CA	Others	CA-others	CA	Others	CA-others			
TOTAL	0.384	0.208	0.176***	0.000	0.000	0.000***			
QUALITATIVE	0.268	0.103	0.165***	0.000	0.000	0.000***			
QUANTITATIVE	0.715	0.353	0.362***	0.000	0.000	0.000***			
HIGHTECH	0.407	0.164	0.243***	0.000	0.000	0.000***			
REGULATED	0.066	0.104	−0.038***	0.000	0.000	0.000***			
No. of observations	7963	65,620		7963	65,620				
Panel B: logistic model estimates for total forecast									
Variables	TOTAL forecast			QUALITATIVE forecast			QUANTITATIVE		
	Odds ratio	Robust SE	Z	Odds ratio	Robust SE	Z	Odds ratio	Robust SE	Z
CONTRACTUAL	1.228	0.067	3.75***	1.229	0.080	3.16***	1.089	0.048	1.93*
ΔEPS	1.021	0.020	1.06	1.032	0.041	0.80	1.022	0.021	1.08
JOINTVENTURE	0.864	0.074	−1.71*	1.090	0.091	1.04	0.840	0.052	−2.83***
SIZE	1.477	0.019	9.12***	1.408	0.018	6.16***	1.484	0.014	8.71***
BM	1.092	0.029	3.24***	1.157	0.041	4.10***	1.096	0.028	3.64***
HIGHTECH	1.027	0.082	0.34	1.111	0.092	1.27	0.886	0.049	−2.18**
REGULATED	0.901	0.140	−0.67	0.832	0.153	−1.00	0.702	0.092	−2.69***
ROA	1.819	0.177	6.14***	1.080	0.127	0.66***	2.187	0.205	8.36***
BETA	0.998	0.002	−0.94	0.999	0.001	−0.48	1.002	0.002	0.77
Pseudo R ² (%)	16.23			10.37			10.37		
No. of observations	73,583			73,583			73,583		

*** p < 0.01.

** p < 0.05.

* p < 0.10.

accrual quality which is not desirable. JV dummy coefficients are different from CA firms' dummy coefficients at 1% level at *PERSISTENCE* of earnings, *SMOOTHNESS* of earnings, *ACCQ*, *PADCA*, and *ABSPADCA* with the t-stats of 2.86, 4.31, 4.06, 2.72 and 5.61 respectively. These findings support the idea that JV-firms and CA-firms have different earnings quality characteristics.

5.3. Market-based earnings quality analysis

Table 5 reports estimates of market valuation of earnings information.

In terms of *RELEVANCE*, the CA coefficient is negative and significant at the .01 level, indicating that CA-firm earnings are typically less relevant for market valuation than the earnings of NA-firms (Lev & Zarowin, 1999). CA-firms also have less *TIMELY* and less *CONSERVATIVE* accounting earnings numbers than NA-firms. In each equation, the CA coefficient is negative and significant at the .01 level or better. In contrast, the JV coefficient is negative in the *RELEVANCE* analysis (not significant at the conventional level), but is positive in the *TIMELINESS* (significant at the .10 level) and *CONSERVATISM* analyses. The conservatism result can also be indicative of a heightened level of information asymmetry in CA-firms (Lafond & Watts, 2007). Following Ball et al.'s (2000) argument about conservatism and timeliness our combined results specifically indicate that earnings of CA-firms may not measure economic income and their income maybe less transparent. Hence, involvement in a CA is associated with a decline in earnings *RELEVANCE*, *TIMELINESS* and *CONSERVATISM* but this does not hold true for JV-firms. T-values that test whether the coefficients on CA dummies differ from those of JV dummies are 4.27, 5.34, and 3.81 for *RELEVANCE*, *TIMELINESS* and *CONSERVATISM* respectively. T-stats have p-values smaller than 0.01 which is a strong support of informational differences.

Table 6 reports the earnings response coefficient analysis. The ERC effect of CA and JV firms is measured as a conditional effect in a cross-sectional analysis where abnormal market return is the dependent variable. Descriptive results in panel A show that CA-firms have lower unexpected returns, and EPS changes, but higher Betas than do NA-firms (all differences are significant at the .05 level or better). CA-firms also appear to have lower unexpected returns than JV-firms (difference is significant at the .10 level).

Panel B of Table 6 reports the main ERC equation estimates. Both CA and the interaction between CA and Δ EPS are negative and significant at the .05 and .01 levels respectively. Hence, controlling for other factors, CA involvement is associated with lower returns and a lower ERC relative to NA-firms. Interestingly, this ERC effect is repeated for JV-firms. That is, JV involvements for firm is also associated with lower returns and lower ERC but not as high as CA-firms. CA and JV (Δ EPS \times CA and Δ EPS \times JV) coefficients are significantly different from each other at 1% level with the t-value 3.04 (4.16) indicating that investors respond differently for CA-firms and JV-firms with different discount levels of 26.44% and 5.47% respectively in comparison to NA-firms.

5.4. Voluntary disclosure

Table 7 Panel A documents descriptive statistics of number of voluntary earnings management guidance for all firms. CA-firms on average (median) give more total number of earnings forecast, qualitative and quantitative guidance than other firms at the 1% level. This result is consistent with our prediction about providing remedial management guidance, and warnings. These univariate results may indicate managers' good intentions and efforts to inform the investors in the case of low information quality environments where accounting numbers are not useful and reliable.

We report LOGIT model regression results in Panel B of Table 7. Being CA-firm increases the likelihood of providing earning guidance by 22.8%, which is significant at the 1% level. This is consistent with the argument that firms increase earnings guidance to avoid legal,

political and reputation costs (Kasznik & Lev, 1995). Existence of CAs increases qualitative number of forecasts 22.9%. The likelihood of a quantitative forecast increases in all samples with the existence of CAs by 8.9 which is significant at 10% level.

These multivariate results are also consistent with our prediction of managers' remedial guidance in the case of low reporting quality and when accounting numbers are not useful. Managers may not be strategic about voluntary disclosures; instead they may try to decrease the effects of a noisy information environment because of the existence of CAs within their organizations.

6. Contributions and limitations

We investigate and identify earning quality differences among firms involved in strategic alliances (either CA or JV firm) relative to those firms which are not involved in any alliances. We also look into the differences between JV-firm and CA-firms' earnings qualities to explore their differential consequences. This latter comparison is of particular interest since JV and CA firms are involved in similar types of activities, but they differ in formality of the arrangement and the amount of the financial information reported about the joint activity. Hence, differences between them more clearly pertain to the differential aspects of the strategic alliance form.

We contribute to the literature by showing that despite the existence of more voluntary disclosure of the CA-firms in hopes to give more reliable data about the financial status of the firm, still CA-firms possess a different earnings quality from JV-firms and NA-firms. Our contributions are significant in actually showing that when the boundaries of the firm are blurred financial reporting quality is adversely affected. In other words, although CA-firms provide more quantitative and qualitative number of voluntary disclosures than JV and NA firms in order to give more reliable data to investors, still defining clear boundaries for the alliance matters. Moreover, when organizations set up a separate organizational unit with clear boundaries, as in the case of the JV-firms, their accounting quality may not deteriorate because of well-defined accounting systems.

Our paper also makes a contribution to the incomplete contract literature which has devoted a significant amount of attention to the inefficiencies generated by incomplete contracts (Aghion & Tirole, 1997; Hart & Moore, 1990). We provide strong evidence that incomplete contracts such as in the case of CA-firms generate inefficiencies in accounting, because CAs are associated with greater noise in their accounting and lower accounting quality. Our findings can be valuable to practitioners and regulators in designing accounting guidelines for firms engaging in contractual alliances.

Our findings suggests that the unstructured reporting and contracting setting of CAs is associated with declines in reporting quality across a number of dimensions. Alternatively, on most dimensions, JVs are indistinguishable from firms that are comparatively uninvolved in CAs. This dissimilarity suggests that the separate business entity structure of JVs mitigates the reporting quality impacts of the interdependencies stemming from strategic alliances.

There are some limitations in our study which are important to consider when interpreting our analysis. The significant hurdle facing our analysis is the general unavailability of either structure or specific financial measures of CA activities. Indeed, the absence of such structures and measures is a likely source of the effects we observe. Hence, we lack clarity regarding how CA involvement compromises reported accounting numbers. Another concern is the existence of omitted variables that may be driving the reporting effects, as well as the underlying choice to become involved in a strategic alliance. That is, the associations documented arise as consequences from factors driving firms to become involved in strategic alliances. The existence of this endogeneity problem would be difficult to disentangle completely. Interestingly, however, our descriptive analysis of JV and CA financial reports suggests that they encompass similar sorts of activities and share similar underlying

motivations. The differences we document arise largely with CA-firms, not JV-firms. That is, within the subset of firms choosing to become involved in strategic alliances it is only the CA form that is characterized by widespread adverse earnings attribute consequences.

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